

Supporting Information

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Performance Optimization of Low-Temperature-Annealed Solution-Processable ZnO Buffer Layers for Inverted Polymer Solar Cells

*Hye-Yun Park, Dongchan Lim, Kwang-Dae Kim and Sung-Yeon Jang**

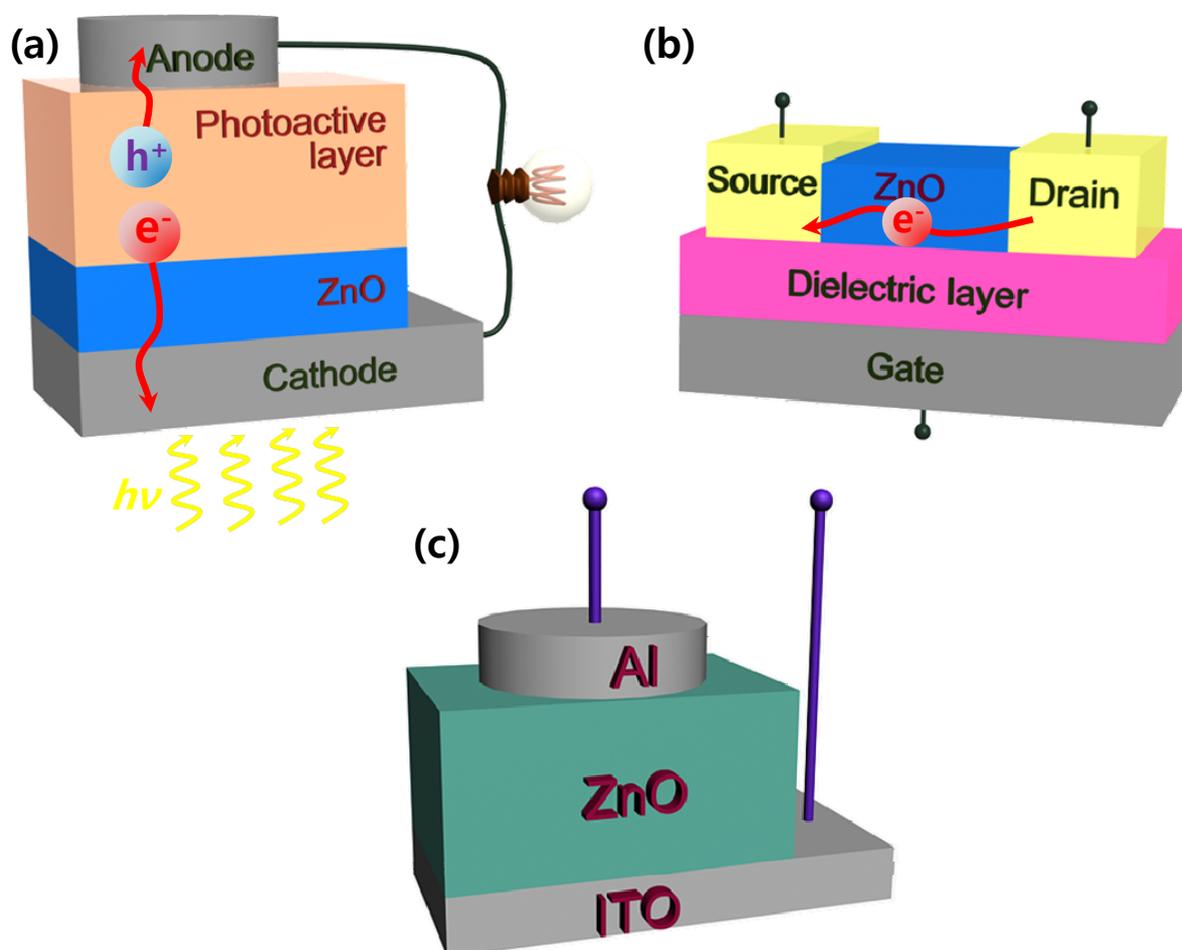


Figure S1. The Schematic device configurations of (a) I-PSC, (b) FET, and (c) electron-only devices. The thickness of the L-ZnO layers for electron-only devices was >250 nm.

	200 °C			250 °C			300 °C		
	TC(100)	TC(002)	TC(010)	TC(100)	TC(002)	TC(010)	TC(100)	TC(000)	TC(010)
DA15	1.20	1.43	0.33	1.14	1.92	0.72	1.10	1.54	0.70
DA60	1.21	1.56	0.63	1.04	1.60	0.72	1.13	1.67	0.63
SA15	0.85	2.78	0.18	0.73	2.63	0.33	1.15	1.47	0.71
SA60	0.61	3.28	0.22	0.77	2.66	0.40	1.17	1.60	0.64

Table S1. The texture coefficient (TC) of various L-ZnO films obtained from XRD analysis.

The temperatures indicate the thermal annealing condition.

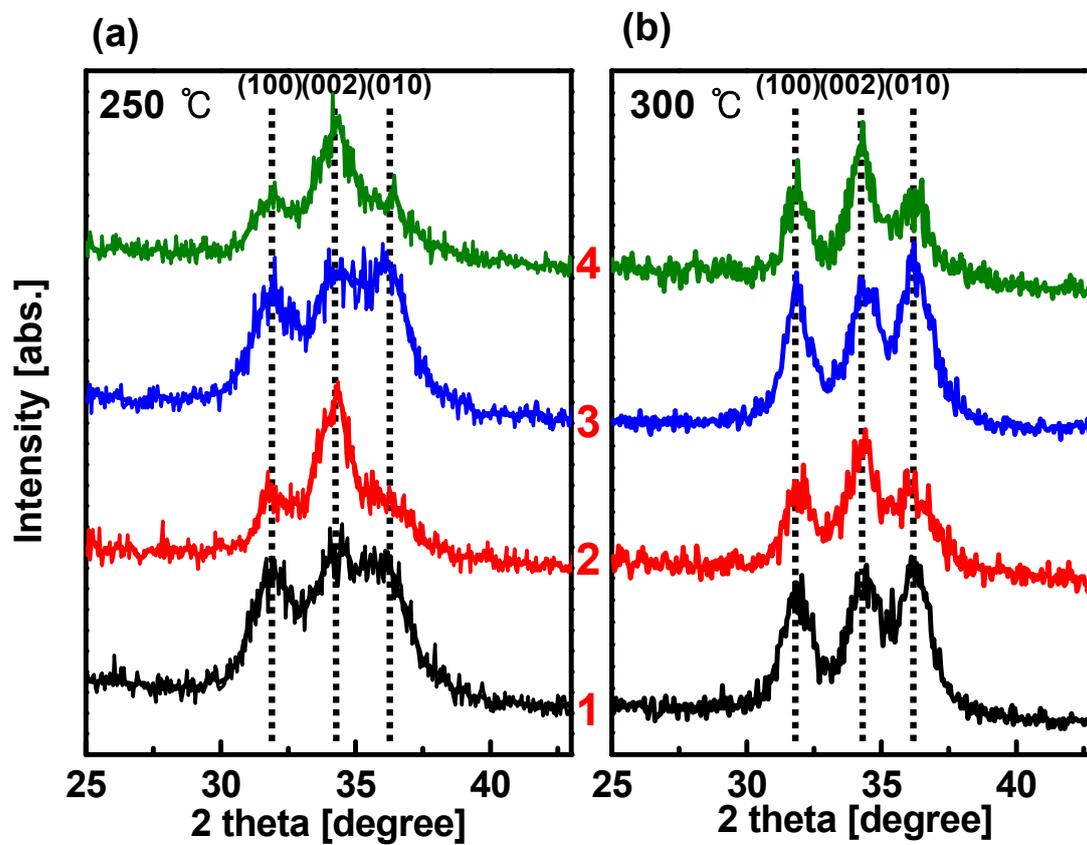


Figure S2. XRD patterns of the L-ZnO thin films for a range of annealing temperatures: (1) DA15, (2) SA15, (3) DA60, and (4) SA60.

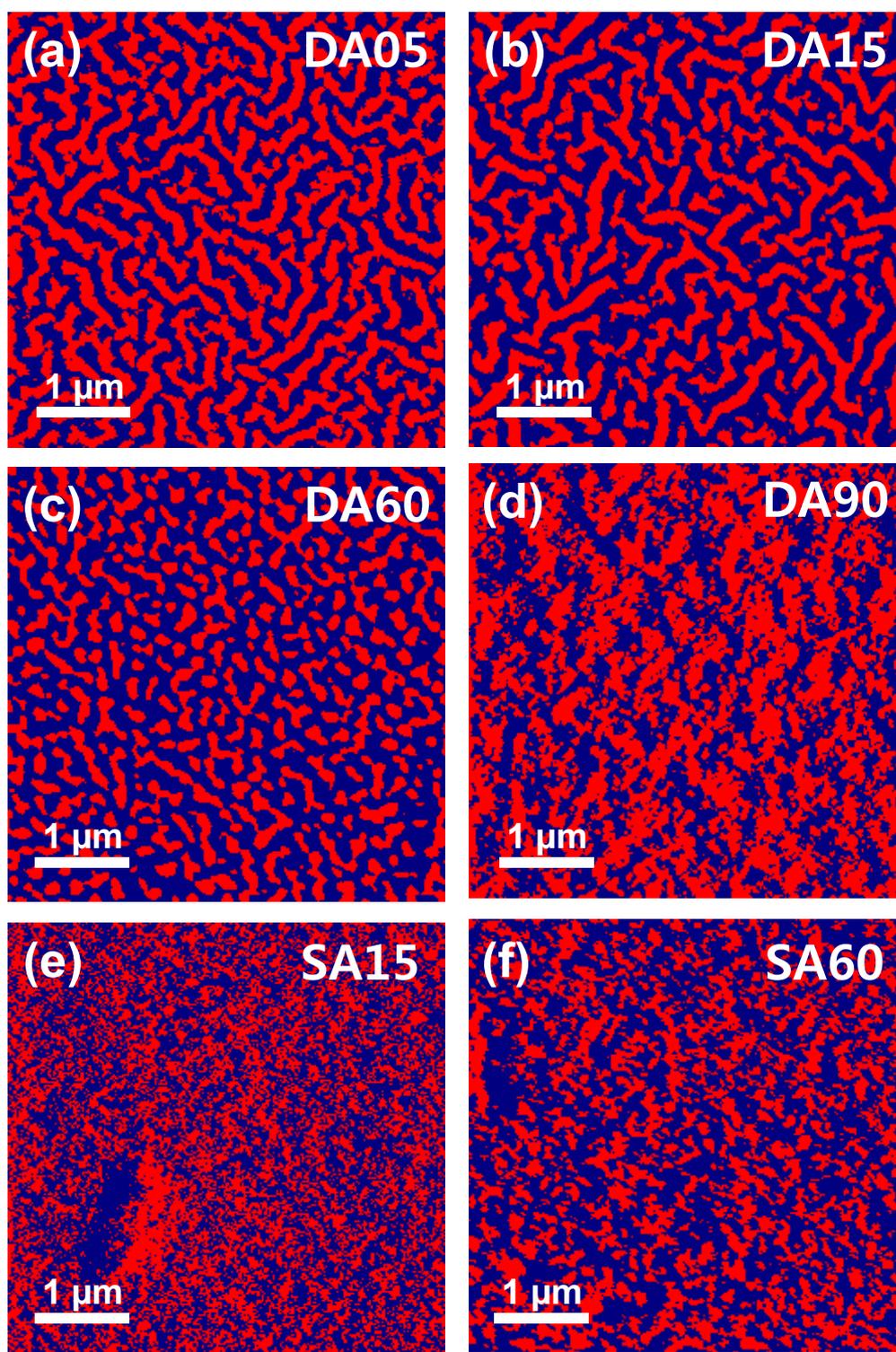


Figure S3. Emphasized surface images of various L-ZnO films: (a) DA05, (b) DA15, (c) DA60, (d) DA90, (e) SA15, and (f) SA60. The R_{rms} values were (a) 4.9 nm, (b) 3.9 nm, (c) 1.4 nm, (d) 1.9 nm, (e) 0.7 nm, and (f) 0.7 nm. The thickness of the films was 40~50 nm.

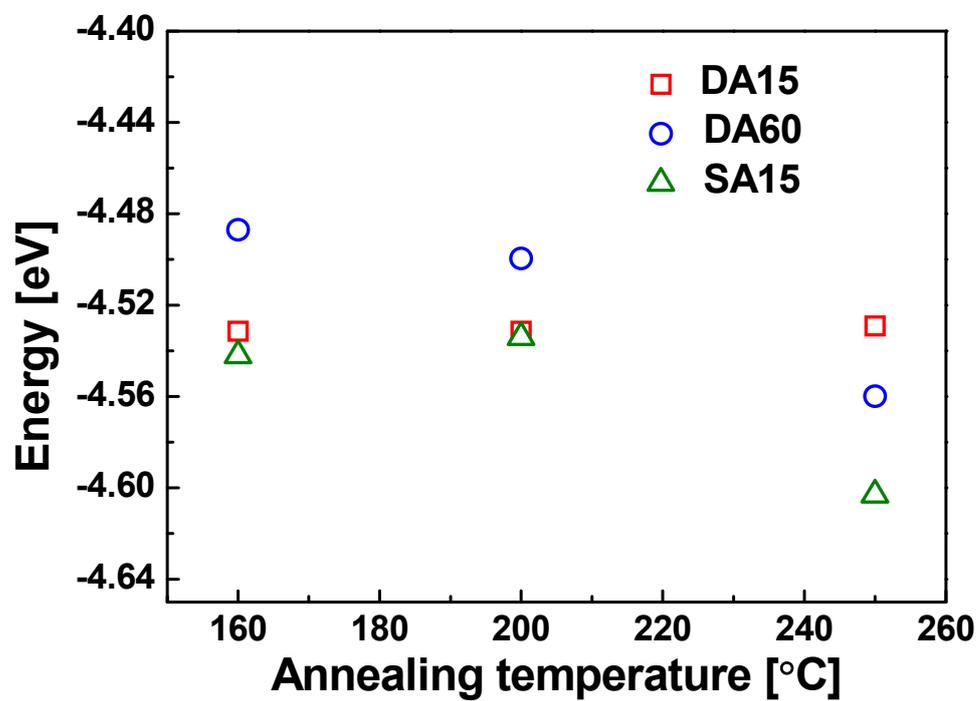


Figure S4. Work-function values of various L-ZnO films as determined via Kelvin probe microscopy (KPM). □, DA15; ○, DA60; △, SA15.

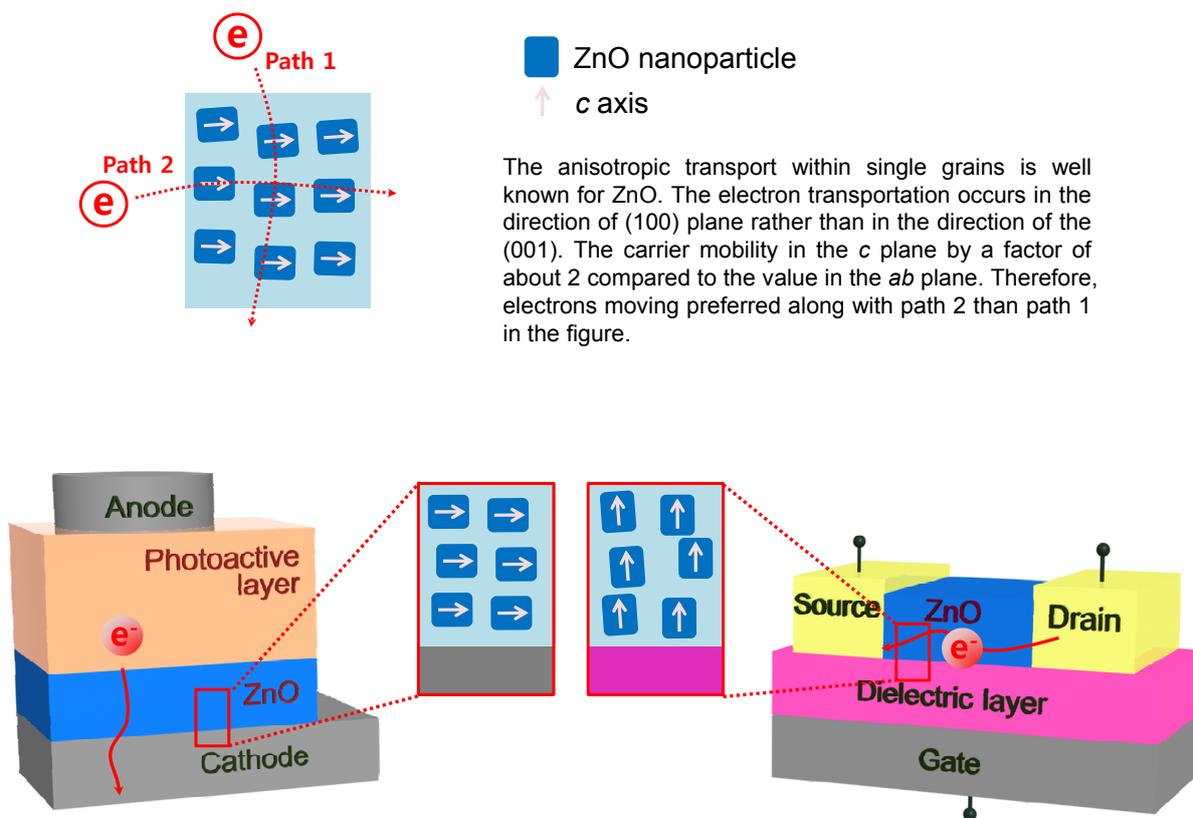


Figure S5. Schematic of the ideal NC orientation of ZnO films for I-PSCs and FETs.